

ADVANCED WINDOWS Backup and disk imaging

If you don't have a backup plan in place you risk losing precious files if your PC crashes, so don't leave it to chance. **Karl Wright** explains how to back up and restore your files and settings before it's too late

It's not a nice thought, but imagine a system crash that wipes out two years' business records and correspondence. Or let's say you use your PC at home; how would you like to lose all your family's digital photos? Even if these scenarios don't apply to you, imagine having to reinstall Windows from scratch, along with every program you've ever installed since you bought it. Do you even have the install discs any more?

Losing data is hard work at best, and can be very upsetting. That's why it's so important to make regular backups of data to a safe place, such as a disc or drive that won't be affected by a complete system failure. In this article, we'll look at Windows' built-in recovery and backup tools as well as a more sophisticated disk-imaging program, so you can protect against and survive even the worst PC crash.

WINDOWS RECOVERY TOOLS

If you press the F8 key as your PC reboots, you'll be taken to the Windows boot menu. Here you're offered the choice of a number of states into which Windows can boot, including an option to return to the Last Known Good Configuration.

If you choose this option, Windows restores the Registry key HKey_Local_Machine\System\CurrentControlSet to the settings it had the last time Windows was able to start properly. This key contains values that determine which driver software and Windows services load when the PC boots. If you haven't made any backups, and your PC stopped working after you installed something new, try this option to get it working again.

Using the Windows boot menu to restore to the Last Known Good Configuration is the most basic system restore option in Windows XP. However, it won't always help.

WINDOWS SNAPSHOTS

Better than Last Known Good Configuration is Windows System Restore. This is a system recovery tool built into Windows XP Home and Professional Editions. To find it, go the Start menu and navigate to Programs, Accessories and System

Tools. System Restore monitors key Windows files and settings. When there's a significant change in your configuration, such as when you install a new application, System Restore creates a new restore point. This is a snapshot of all your computer's vital files and settings.

If Windows starts behaving badly, perhaps by crashing all the time or refusing to start properly, you can use this snapshot to restore your system to a previous state. This restoration method is more sophisticated than the one carried out using Last Known Good Configuration, in which only the entries for a single Registry key are restored.

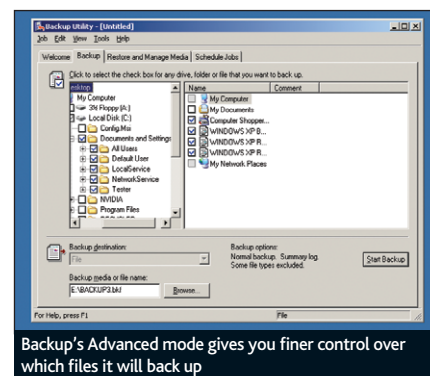
To protect your system using Windows Restore, you should first make sure that it's turned on. Right-click My Computer and choose Properties from the menu that pops up. On the System Restore tab, make sure the Turn off System Restore on all drives box isn't ticked. Next, open System Restore and check that useful restore points have been created. If your PC does suffer a crash, you don't want to have to take it back to the state it was in months previously.

To open System Restore, go to Accessories, System Tools under Programs in the Start menu and choose System Restore. When it opens, you have two options: Restore my computer to an earlier time or Create a new restore point. If there isn't a useful recent restore point, you can create one. If you've recently carried out a system restore, you'll also see the Undo my last restoration option. This is useful if you discover that you've restored the system using the wrong restore point.

If Windows is so badly corrupted that it won't start properly, you can still use System Restore. Restart your PC and use F8 once more to get into the boot menu, and choose Safe Mode. When you boot into Safe Mode, you'll be offered the chance to use System Restore.

WHICH BACKUP?

Windows XP has its own sophisticated backup tool. This can be found under Accessories, System Tools and is simply called Backup. It can be used in either



Backup's Advanced mode gives you finer control over which files it will back up

Wizard or Advanced Mode. In Wizard Mode, you click through a simple five-step process, choosing the files you want to back up and where to save the backup. Windows then creates a backup file, containing all your data, and a recovery floppy that will allow you to access the backup and use it to restore your system, even if your system isn't bootable.

In Advanced Mode, Backup operates in much the same way, but you have more options available. You can, for instance, decide whether you want to create a full backup, an incremental backup, a scheduled backup and so on.

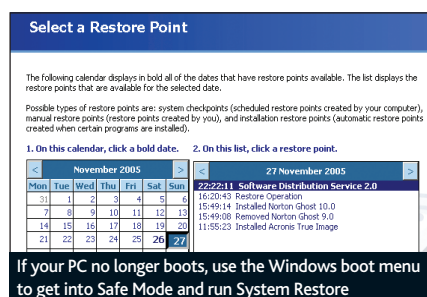
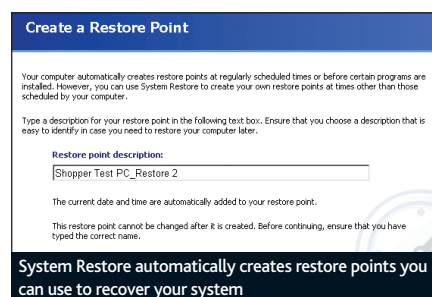
There are some limitations to what Windows Backup can do. Compression options are limited so, if you back up large areas of your hard disk, you will end up with backup files many gigabytes in size. Backup is not ideal for fixing a completely corrupted installation of Windows because you'll have to reinstall Windows, then use Backup to restore your settings and data.

For these reasons, you shouldn't rely on Windows' built-in backup tools alone. Invest in a good disk-imaging program that lets you create an exact image of the file systems. Then, if your Windows installation becomes unusable, you can copy this image to your hard disk. Within 20 minutes, you'll have a working system that's in the same state as it was when you first made the image. Here we show you how to use disk-imaging software to protect your system and your data.

DISK IMAGING

If you're used to the way Windows normally works, you might think it's easy to create an exact copy of the hard disk or partition where Windows is installed. Surely you just need to drag and drop the contents of your disk on to another disk, and the copy is done? Sadly, it isn't this simple.

As well as all the files and folders you can see, there are some you can't, and these are vital to the



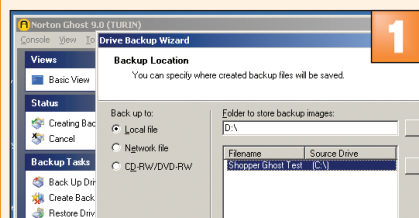


HOW TO...

Create a disk image

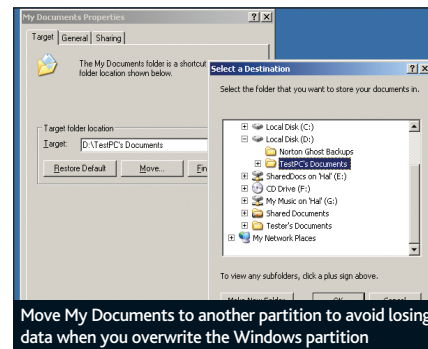
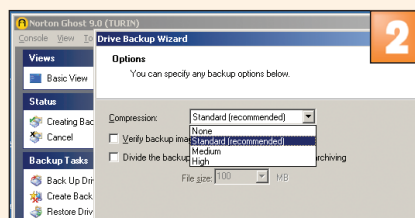
Whether you're using Acronis TrueImage or Norton Ghost, creating an image of a hard disk is an easy process. Simply choose the drive you want to back up, where to save the backup, and how much you want your backup file to be compressed.

- 1 Choose which drive you wish to take an image of and where to save that image. If you choose to save the image on the

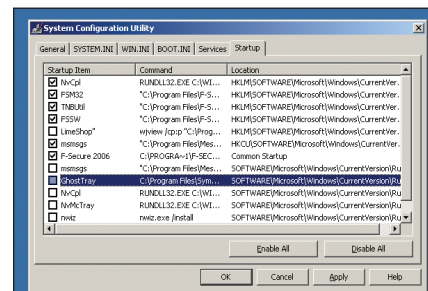


source drive, you'll find Ghost won't be able to do it. TrueImage can, but it warns you to move the image later.

- 2 Choose the level of compression you want to apply to your image. Applying lots of compression will slow down the process of creating the image, but it's worth it if you have limited space or you plan on making multiple images.



Move My Documents to another partition to avoid losing data when you overwrite the Windows partition



Do some basic system maintenance before making a disk image. Ensure only programs that need to run all the time start with Windows

functioning of Windows. These files and folders, including the Master Boot Record, the file allocation table and any partition information, cannot be copied manually. To make an exact copy of your Windows hard disk or partition, a disk-imaging program is essential.

The two leading disk-imaging programs are Symantec's Norton Ghost and Acronis TrueImage. Also, on your cover disc there is a free copy of Paragon Exact Image. All three work similarly.

PREPARING YOUR SYSTEM

If you plan to make disk images regularly for backup purposes, there are a few things you can do to make life easier. First, if you can, create two partitions on your hard disk and move all your data files to the second partition. Unfortunately, the Windows XP disk-management tool does not allow you to resize partitions dynamically, so you'll need third-party software to make space for the second partition. The best software we've found is a Linux program called PartEd, available free as a bootable CD from www.sysresccd.org. To use

PartEd, download the CD image, burn it to a disc and follow the instructions on the website.

Once you've created your second partition, format it and create a new folder, calling it something like John's Documents. Right-click on My Documents on your desktop and choose Properties. Click the button marked Move and browse to the folder you created on your second partition. When Windows asks you if you want to move the contents of My Documents to your new location, choose Yes. Your data will then be located on a different partition to Windows. This makes it possible to overwrite Windows with a backup disk image without losing your data, should Windows start to misbehave. It's still worth making regular backups of your data files, though.

Before you create your first disk image of Windows, you should also make sure all the customisable settings in Windows are as you want them. From the Start menu, go to Run, type MSCONFIG, go to the Startup tab and make sure only those programs that need to start every time you boot into Windows have a tick against them.

Download the latest virus definitions for your virus scanner and check there are no viruses on your system. Also download the program RegClean from www.download.com and run it to remove superfluous entries from your system Registry.

Finally, make sure all your programs work as they should and uninstall any programs you don't use any more. Once you've done all this, you're ready to take an image of your Windows installation that you can use to recover your system after a crash. See our How To... Create a disk image box, above left, to find out how.

GHOST IN THE MACHINE

Norton Ghost has other useful functions built in. It can scan your hard disk for bad sectors and other physical damage that might have caused a crash and could prevent a successful re-imaging. It also has a virus scanner, though this works only with virus definition files designed for Symantec's Norton AntiVirus. If you don't have a copy of Norton AntiVirus installed, you'll have to rely on the definitions built into Ghost, but these are old and useless against the latest viruses.

You could go a step up from programs such as TrueImage and Ghost and buy a professional disk-imaging program such as Ghost Solution Suite. Then not only could you copy images from a drive on your network, you could also push images from a server PC on to clients on your network. If you have lots of PCs on which you need to install Windows, this will save you hours of work.

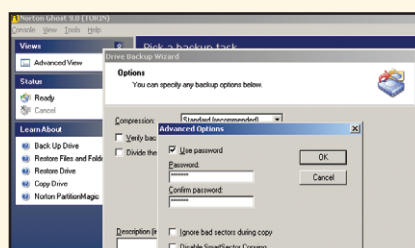
IMAGE CONSCIOUS

By now you should have a clear idea of how you can protect your installation of Windows and your data. If you use the backup methods we've shown you here, the chances of losing precious data in a system crash will be greatly reduced.

If you rely on the utilities built into Windows, you'll need to be prepared to put in a lot of regular work, creating backups and restore points, but at least you will have some peace of mind.

PASSWORD PROTECTION AND ENCRYPTION

You can also password-protect and encrypt your backup to prevent unauthorised people extracting files from it or using it to steal your installation of Windows. Ghost also integrates well with Windows XP user accounts. By default it can be used only by Administrators. You can, however, add specific non-administrators to your list of approved users with Ghost's Security Administration tool. Ghost respects network hierarchies, forcing



you to enter a domain or workgroup name, a username and a password before it allows you to save or restore a file over the network.



HOW TO...

Restore your PC with Ghost

If your PC falls victim to a virus or another problem that renders your installation of Windows unbootable, you need to restore your system using the recovery disc that comes with your disk-imaging software. Ghost and TruImage come with recovery discs or, if you downloaded them, have utilities that allow you to make one.

These discs contain a basic operating system that you can use to boot your PC. Once up and running, you can use the tools on the disc to find one of your system images and write it to your Windows hard disk or partition. Here we show you how to restore a hard disk using a Ghost image stored on a network drive. We could also have restored the system from a USB drive or a separate partition on the main hard disk.

1 Put the recovery boot disc into your CD or DVD drive and restart the PC. Make sure the PC's BIOS is configured to boot from the CD. Ghost takes some time to load. When it starts, accept the licence agreement

and choose to start the program with networking services available.

2 Go to Advanced Recovery Tool, Utilities, Configure IP. If you don't have a device such as a router that will assign an IP address to your PC automatically, you may need to assign one manually. If you normally use a wireless network, you will probably have to connect to your router using an Ethernet cable.

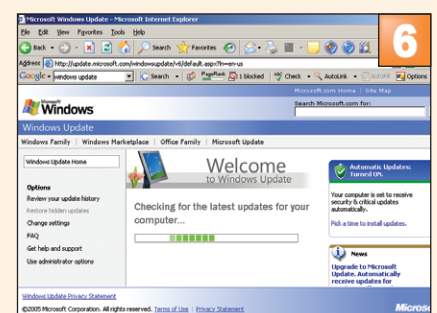
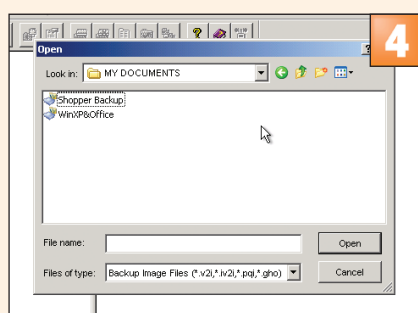
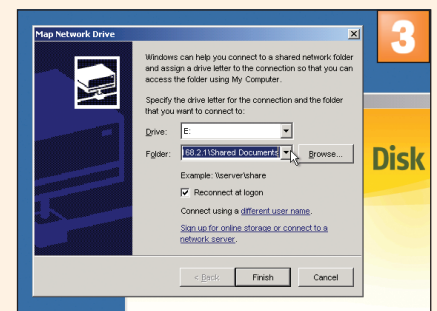
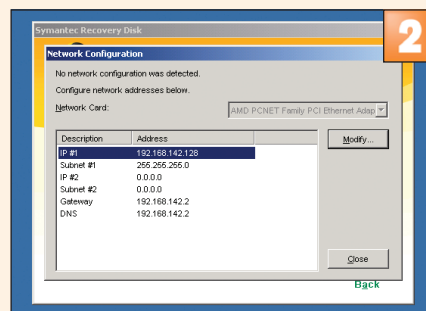
3 You need to map your network drive so Ghost's recovery console can work with it. Go to Utilities again, and this time choose Map Network Drive. In the dialog box that pops up, either browse to the place on your network where your image is stored or enter the path manually; for instance, \\192.168.2.1\Shared Documents.

4 Before you overwrite your corrupted installation of Windows, use the file recovery tool to copy any files you need

but haven't backed up from your corrupted disk. To do this, go to the main menu once more, choose Rescue Files and Folders, and use the image browser to copy and paste files to a safe storage area.

5 Go back to the main screen and choose System Restore. Browse once more to your network drive and open the correct image. Tell Ghost which local drive you want to write the image to and begin the restore process. Make sure the local PC and the network are not interfered with during this process.

6 Once the imaging is finished, let your computer reboot. Remove the CD before Ghost loads. Your PC should reboot into the restored version of Windows. At this point, you should make sure that everything now works OK and update Windows. There are bound to be lots and lots of security updates available.



For real security, however, we suggest you use a combination of Windows and third-party software. Create regular restore points using Windows System Restore, and also take regular backups using a disk-imaging program such as Norton Ghost, Acronis TruImage or Paragon Exact Image.

These programs are versatile and comprehensive. They won't just back up your files, but your entire Windows installation. They give you the control, flexibility and security that Windows can't offer by itself. If your backup system isn't easy to use, you won't bother to use it. Using the correct tools will take the pain out of preparing for a data disaster.

RECOVERING INDIVIDUAL FILES

Both Ghost and TruImage allow you to browse the contents of compressed images to recover individual files and folders. This is useful if you just need to recover a few files and don't want to have to overwrite your entire installation of Windows. Ghost has a tool called the Backup Image Browser, while TruImage allows you to mount an image so it appears as a hard drive in My Computer.

